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ABSTRACT

While the goals for reading may be different, all efforts in reading must result in comprehension in order for goals to be realized. Reading comprehension is so complex that it defies any attempt to arrive at a single definition. S. Toulmin's argument structure model provides the basis for an analysis of the connection between critical reading and reading comprehension. The framework allows for the delineation of the crucial function served by background knowledge in the formulation of interpretations of written discourse. An expansion of the basic model provides a hierarchical structure in order to accommodate embedded arguments typical of natural discourse. T. A. Van Dijk's notion of a superstructure and his articulation of operative mental processes in the form of macrorules offer a meaningful way of connecting the psychological perspective on reading comprehension based on schema theory and the philosophical perspective on reading comprehension based on Toulmin's argument structure analysis. A method now needs to be developed through which texts of moderate length can be systematically analyzed. (MG)

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# Argument Analysis, Critical Thinking and Reading Comprehension

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# ARGUMENT ANALYSIS, CRITICAL THINKING AND READING COMPREHENSION

by

JULIA TO-DUTKA

## ABSTRACT

This paper explores the connection between critical thinking and reading comprehension. Toulmin's argument structure model provides the basis for such an analysis. The framework allows for the delineation of the crucial function served by background knowledge in the formulation of interpretations of written discourse. This basic model is expanded to provide a hierachical structure in order to accommodate embedded arguments typical of natural discourse. Van Dijk's notion of a superstructure and his articulation of operative mental processes in the form of macrorules offers a meaningful way of connecting the psychological perspective on reading comprehension based on schema theory and the philosophical perspective on reading comprehension based on Toulmin's argument structure analysis. The potential usefulness of this approach in understanding reading comprehension and in enhancing instruction is discussed.

# Argument Analysis, Critical Thinking and Reading Comprehension

**Julia To-Dutka**

People read for many different reasons. Some read to pass a test, some read to gain knowledge of specific topics, and some read purely for pleasure. While the goals for reading may be different, all efforts in reading must result in comprehension in order for these goals to be realized. What is involved in comprehending a written text? Reading comprehension is so complex an act that it defies any attempt to arrive at a single definition. The process of reading comprehension is, however, instructively described by E. L. Thorndike's identification of the kinds of mental operations included in this activity. Thorndike (1917b) states:

> Understanding a .... printed paragraph is then a matter of habits, connections, mental bonds, but these have to be selected from so many others, and given weights so delicately, and used together in so elaborate an organization that "to read" means "to think" as truly as does "to evaluate" or "to invent" or "to demonstrate" or "to verify." (p.114)

In contrast to the conventional view that reading involves a bottom-up approach in which the reader aggregates the meaning of words to understand clauses, aggregates the meaning of clauses to understand sentences, and aggregates the meaning of sentences to understand paragraphs, Thorndike's invited us to look at reading as an act of thinking, evaluating, inventing, demonstrating and verifying in order to comprehend what is being presented. Thorndike's perspective, which alluded to the implicit relationship between reading comprehension and critical thinking, is amply supported by recent research in schema theory which states that a reader's schema, or organized knowledge of the world, provides the basis for comprehension, learning, and remembering. In this paper, I will demonstrate how Toulmin's critical thinking theory enhances our understanding of reading comprehension based on a schema-theoretic psychological perspective. Recognizing that different genres of writing may bring in different factors, this discussion will be limited to understanding expository prose.

According to schema theory, reading is perceived as an interactive process in which the reader utilizes both the information which flows from the page and the body of knowledge stored in the person's mind to make sense of a text. While graphophonemic, morphemic, syntactic, and semantic information is available, the reader makes use of only those elements which satisfy the hypothesis formulated in his/her mind. Comprehension occurs when an interpretation can be made to explain the

content of a discourse. Consider the following example taken from a classic study by Bransford and Johnson (1972):

> If the balloons popped the sound wouldn't be able to carry since everything would be too far away from the correct floor. A closed window would also prevent the sound from carrying, since most buildings tend to be well insulated. Since the whole operation depends upon a steady flow of electricity, a break in the middle of the wire would also cause problems. Of course, the fellow could shout, but the human voice is not loud enough to carry that far. An additional problem is that a string could break on the instrument. Then there could be no accompaniment to the message. It is clear that the best situation would involve less distance. Then there would be fewer potential problems. With face to face contact, the least number of things could go wrong. (p. 719)

Subjects in the experiment found this passage difficult to understand. However, when the text was accompanied by Figure A, (see page 16) they found it more comprehensible and were able to recall many of the details. Figure B, (see page 16) on the other hand, offers no help to the readers. This experiment demonstrates that if a reader cannot readily activate or construct a schema to explain the connections between and among elements in a text, comprehension cannot take place even if one encounters no difficulty in word meaning or sentence meaning.

According to schema theory, the application of an appropriate schema to a given text is necessary for comprehension to occur. To the extent that different schemata can be activated or constructed to serve as the basis for understanding, different interpretations are possible. Consider the following passage used in an experiment by Anderson, Reynolds, Schallert, and Goetz (1977):

> Tony slowly got up from the mat, planning his escape. He hesitated a moment and thought. Things were not going well. What bothered him most was being held, especially since the charge against him had been weak. He considered his present situation. The lock that held him was strong but he thought he could break it. He knew, however, that his timing would have to be perfect. Tony was aware that it was because of his early roughness that he had been penalized so severely -- much too severely from his point of view. The situation was becoming frustrating: the pressure had been grinding on him for too long. He was being ridden unmercifully. Tony was getting angry now. He felt he was ready to make his move. He knew that his success or failure would depend on what he did in the next few seconds.

This passage invites at least two interpretations. One revolves around

the schema of a convict planning an escape while the other has to do with a wrestling match. Each interpretation is possible, given a specific schema being called upon to make sense of the text.

Schema theory has enabled us to recognize that there is a relationship between background knowledge and reading comprehension. Both the Human Information Processing Model advanced by Bransford and Franks (1971) and the concept of the "advance organizers" forwarded by Ausubel (1968) emphasize the importance of activating sources of pre-existing knowledge that can be reassembled to assimilate or accommodate new information. These theories suggest, in terms of processing, how pre-existing knowledge enables readers to label and categorize incoming information to overcome the bottleneck situation when moving data from short-term memory to long-term storage and thereby promotes comprehension and learning. These theories, however, do not explain, in functional terms, the nature of the relationship between background knowledge and reading comprehension.

Toulmin's (1958, 1979) argument structure analysis appears to offer a conceptual model to enable us to explain the relationship between background knowledge and reading comprehension in functional terms. Thorndike's (1917a) view of reading as essentially a reasoning process provides the very basis for the potential use of Toulmin's argument structure analysis to clarify the schema-theoretic perspective offered by cognitive psychologists whose work has not as yet gone beyond information processing structures to analyze the nature of reasoning which involves the making, supporting, justifying and challenging of claims. According to Toulmin, reasoning involves making claims, offering supporting evidence and responding to real or imagined challenges. In the context of reading, this may be translated into identifying main ideas, finding supporting details and establishing the necessary justification by way of inference.

In order to develop an understanding of the basic element in the overall pattern of analyzing a fully reasoned argument, it is useful to provide some illustrative examples. Let us consider the fundamental starting point of an argument whereby a specific claim or assertion is put forward for acceptance. Suppose the following claim has been asserted by your neighbor in a casual conversation:

"It is going to rain this afternoon."

This claim represents the initial element that we identify in an argument when examining its structure or train of reasoning. By itself, a particular assertion is an unsubstantiated opinion. Yet, we have a right to assume that an assertion put forward publicly for general acceptance is well-founded. That is, it is implied that there is supporting evidence and that under critical analysis, it would hold up and help establish the claim.

With respect to the neighbor's meteorological claim, we might ask,

"What specific facts does he rely on to make such a forecast?" In order to substantiate his claim, the neighbor might submit the following facts for consideration:

1. The air feels "thick" and vaporous.
2. Dark clouds are looming on the horizon.
3. The barometer on the wall has been falling.

With the specific facts of the situation having been secured, the first step toward establishing an initial claim has been made. These specific facts relied on as the immediate support for a specific claim are referred to as the grounds of the argument.

Consider the following claims as additional examples:

"This year, the consumer's choice in purchasing a subcompact car is clear; the Toyota Corolla is the best buy."

"The Philadelphia Phillies will not be able to repeat as National League champions this season."

"The voter turnout in the upcoming general election will be weak."

Each one of these assertions seems to imply its own complementary question. What particular features of the Corolla make it such a good buy? What exactly will prevent the Phillies from winning the pennant? Precisely what factors will influence the voters to stay home in November?

Here we are *not* asking for general theories to justify each claim. For this reason, the following statements do not constitute immediate support (or grounds) for their respective claims.

-- Foreign cars are better constructed than domestic cars.

-- No team has repeated as National League champs two years in a row since 1976.

-- The percentage of registered voters participating in general elections has been declining for more than two decades.

Instead, we are demanding that the claim be supported by the *specific* considerations which justify it *and* that distinguish it from any other claim.

The grounds for each of the claims previously introduced might look something like this:

-- The Toyota Corolla is a superior buy because its fuel economy

surpasses the other subcompacts in its class. It has excellent handling. The sticker price is competitive with the other subcompacts both domestic and foreign and yet if offers more standard options than any of its competitors. Finally, the warranty provided by the manufacturer includes engine repair for 25,000 miles, an unusual offering.

-- The Philadelphia Phillies are not likely to repeat as National League champs because they have released or traded four veteran players who provided needed leadership down the home stretch last season. Furthermore, their young players who played sporadically last year have not proven themselves over the long haul. Finally, some of the older remaining veteran stars on the team had lackluster seasons and show signs of decline.

-- The voter turnout in the November general election will be small because many of the pressing economic problems of the last three years have shown little improvement. None of the candidates has the charisma to excite the voters. In addition, many people do not feel as if their votes really count.

Note that each one of the previous claims has as its support several pieces of information or "facts" which collectively we have termed, the *grounds*. Subsequently, we will differentiate the total collection of "facts" or ground for a claim from each individual "fact" supporting the claim by labeling the latter, *evidence*, E. Thus, the ground of a claim can be considered as the set of evidence which specifies the particular information relied on to support a given claim.

We have seen how the initial step in developing an argument structure takes place when an assertor, A, puts forward some original claim, C, and in support provides a set of specific evidence, termed grounds, G. Now, suppose we go back to our earlier meteorological claim and take it a step further. Consider the following exchange:

A: It is going to rain this afternoon.

Questioner: What makes you say that?

A: I noticed the dark clouds, the humidity, and the barometric reading.

Q: So what? Is your claim really justified from those random observations?

A: Well, yes. In general, those types of conditions together (dark clouds, high humidity, and low atmospheric pressure) suggest that rain is imminent.

Here we see that the questioner, even after having been given the particulars of the argument, that is the initial claim and the specific supporting evidence, feels the argument has not been fulfilled. Although we might think he was lacking somewhat in common sense or sophistication, or both, he didn't quite grasp the inferential connection between the initial claim and the supporting evidence presented. It seems he needed assurance that the step from G to C was a trustworthy move which he could safely accept. For most of us, the step from G to C (dark clouds, high humidity, low atmospheric pressure therefore rain) has become a matter of simple common sense due to our considerable previous experience. Yet, because of the highly probable, almost automatic, nature of this particular relationship, we tend to ignore the tacit assumptions that are involved.

In order to convince the questioner, Q, that a *particular* claim can be reliably inferred from *specific* G, A has had to produce the *general* considerations implicit in the train of reasoning, that is:

> "Whenever you have those kinds of meteorological conditions occurring together, you have rain."

This last statement represents an invisible, often "assumed" step in an argument. It is, however, a very important step because it has the effect of authorizing the leap from G to C. If A had claimed that it was going to rain because the sky was blue, the birds were singing, and his left eye was twitching, one could easily see the crucial importance of having further general justification for the argument. The general support provided (explicitly or implicitly) in an argument to establish the reliability of the step from grounds to claim is referred to as a *warrant*.

To help further clarify this concept of warrant we can provide warrants for the other three argument structures we have been developing.

1. An automobile compared to others in its class which provides superior fuel economy, handling, and warranty protection and offers more options at a competitive price must be the consumer's best buy.

2. A team needs to have proven players providing experienced leadership in order to win the pennant in the highly competitive, evenly watched National League.

3. A significant number of voters typically require a compelling reason to draw them to the polls.

Each of these warrants, we should point out again, tends to justify the step from G to C by producing some more *general* considerations, for example, how voter turn-out tends to go for elections in general, not just this year but in any given year.

The next issue we must address in examining an argument structure is how to distinguish those warrants for arguing from G to C that are reliable and relevant (and thus substantive) from those that are not. Let us suppose that a questioner, Q, challenges the original assertor's warrant, W, which allegedly substantiates the step G (dark clouds, low pressure, high humidity) to C (rain in the afternoon). Q wants to know that the general consideration or warrant can be trusted, not only in itself as a general principle, but as it applies to the present specific circumstances under discussion. The questions the argument must face at this stage might be stated as follows:

> 1. Is your warrant reliable at all? In general, do high humidity, low atmospheric pressure, and dark clouds actually result in rain?
>
> 2. Does your warrant actually apply to the particular case in point? Do the particular weather phenomena observed in the present case correspond to the generalized circumstances in the warrant?

Note that neither Question 1 nor Question 2 serves to dispute the specific evidential basic G for the claim, C. It has been conceded that there are dark clouds looming, the barometer has fallen, and the air feels "heavy." Question 1 represents a challenge to the "soundness" or reliability of the warrant. Question 2 represents a challenge to the *relevancy* of the warrant. Ultimately, an argument cannot be considered well-founded or cogent unless the warrants appealed to by A are both reliable and relevant.

To demonstrate that the warrant is both reliable and relevant, the assertor, A, must produce additional supporting information which we call *backing*. According to Toulmin, "the kinds of information that serve as backing or foundation for our warrants are broader and more general than the individual warrant itself" (1979, p. 61). This broader foundation which "backs-up" the warrant is that final body of knowledge and/or experience that is presupposed as authoritative by anyone who was willing to accept the legitimacy of the warrant.

In the current example, the assertor would undoubtedly fall back on the general body of meteorological knowledge concerning the condensation of water vapor. In other words, to meet Q's challenge to his warrant, A will provide the required legitimizing backing by putting the argument in a larger scientific context.

Keep in mind that different kinds of warrants operate in the context of different fields and forums. The forum of argumentation determines the significance of claims, the relevance of supporting reasons, and standards of acceptability. Arguments are judged in relation to criteria of adequacy that are constitutive of reasoning within that forum. Forums include social institutions such as law courts and business, particular academic disciplines and other practices. In addition to determining standards of rigor,

rhetorical style and canons of evidence, forums also stipulate the outcomes of the reasoning process. For example, in law, reasoning usually results in a judgment that may be unsatisfactory to some of the participants. In literary criticism, reasoning requires little more than a shared sense of the plausibility of competing points of views. In science, by contrast, reasoning is deemed successful just when universal accord is achieved.

Thus, the backing used to validate the warrant may vary greatly, depending on the forum under consideration. In one context, for instance, a consumer's "best buy" determination might be founded on widely accepted economic principles such as maximum consumer satisfaction. In another context, we might back the warrant that a National League team needs proven players to provide leadership to win the pennant by referring to the official records of major league baseball and to sabermetrics, the mathematical and statistical analysis of baseball records. While supplying the backing to legitimize the generalization that many voters require a compelling reason to turn out on election day, one could turn to the fields of political science and social psychology for scientific studies of voter behavior.

Thus far, we have been developing our argument structure model with the assumption that if each successive step could be established by the assertor, A, then the initial claim would be considered completely trustworthy. However, despite the usefulness of such oversimplification in explaining the basic elements of an argument structure, aspects of real-life arguments have been ignored. It is an unusual argument, for instance, which we can rely on as 100% certain and reliable. Most arguments support their respective claims with varying degrees of reliability. Even after A has established all the grounds, warrants, and backing on which he/she is relying, the conclusiveness of a claim can be qualified by a) the kind of argumentative strength attributed to C by the assertor on the basis of its relationship with G, W, and B; and/or by b) possible rebuttals, that is the extraordinary or exceptional condition that might undermine the force of the supporting arguments.

Since many arguments arrive at conclusion on the basis of less than perfect evidence, it is not always the case that a warrant absolutely must license the step from G to C. Oftentimes, we deal with claims advanced with modifying statements which qualify the strength with which an argument is presented. For example, compare the following two claims:

1. G, therefore it is certainly going to rain this afternoon.

2. G, therefore it is probably going to rain this afternoon.

As you can see, each of these argument statements possesses a different adverbial modifier which indicates the kind of argumentation strength to be attributed to the claim. In the first case, the assertor, A, has forcefully and

unconditionally advanced his claim. We would presume that he had gathered all the evidence that could conceivably be needed, that the warrant was both "sound" and relevant, and, finally, that the backing was authoritative. Only in such a case could such an unqualified statement be reasonably advanced. Yet, even with such an impeccably constructed argument, it would be a foolish practice to underestimate the unexpected!

The second argument statement, presented above, indicates a weaker position. The assertor, A, although positing a strong relationship between G and C, does not argue a 100% correlation. Perhaps, the quantity or quality of evidence available points strongly to the possibility of rain but not conclusively. A tentative position might also be called for because the scientific backing relied on only calls for a provisional conclusion.

There is in real-life arguments another reason why claims often have to be qualified as less than 100% certain. A cautious assertor may want to circumscribe an argument by indicating that the warrant may apply in cases like the one at hand *only* under certain conditions. In other words, there may be exceptional or extraordinary conditions which could undermine or rebut the applicability of the warrant. These possible exceptions would, therefore, be dealt with through a disclaimer. A typical way to qualify the argument statement to account for its conditional nature is by using the form, "G, so *presumably* C." By including such an adverbial modifier in the argument statement, A is indicating that certain disqualifying conditions may be possible but they are assumed not to exist.

Having presented the major components of Toulmin's argument structure, we need to return to discuss the potential usefulness of this model to understanding reading comprehension. If an implicit goal in reading is to generate meaning from text, the basic task of the reader is to identify the claim of a text and the way the writer has gone about using evidence to support the claim. The connection between the claim and the ground cannot be fully comprehended unless the reader can either identify an explicitly stated warrant or supply one on his/her own. This warrant, rooted in some kind of authoritative premise called backing, legitimizes the interpretation that the reader gives to a text. The explanatory power of this model serves several important functions:

1. It provides a way to explain why the activation of appropriate schemata is crucial to comprehension in that the warrant and backing needed for the reader to make sense of a text rest with the appropriate use of his/her background knowledge. The meaningfulness of the content of a text to the reader plays, therefore, a significant role in comprehension.

2. It provides a way to explain why comprehension of even the simplest text cannot occur without the reader being able to make inferences. The more the reader has to supply by way of inference, the more demanding the reading task.

3. It provides a way to explain breakdowns in comprehension. While claims and grounds may be implicitly suggested or explicitly stated in a text, the reader needs to be able to assign functional roles to different ideas emerging from a text in order to interpret them. This interpretive act is guided by "what makes sense," as governed by the warrants and backings that the reader must either infer or supply, based on his/her background knowledge of the subject matter.

4. It provides a framework for teaching for reading comprehension, in that as teachers, we need to recognize that a reader's ability to supply the warrant and backing for a given argument is a pre-condition for comprehension.

5. It provides a framework for the direct teaching of reading comprehension in that the skills involved in constructing argument structures can be taught to enable readers to analyze textual information, to go from claims to grounds and vice-versa, to guide the formulation of different interpretations, and to evaluate the product of comprehension.

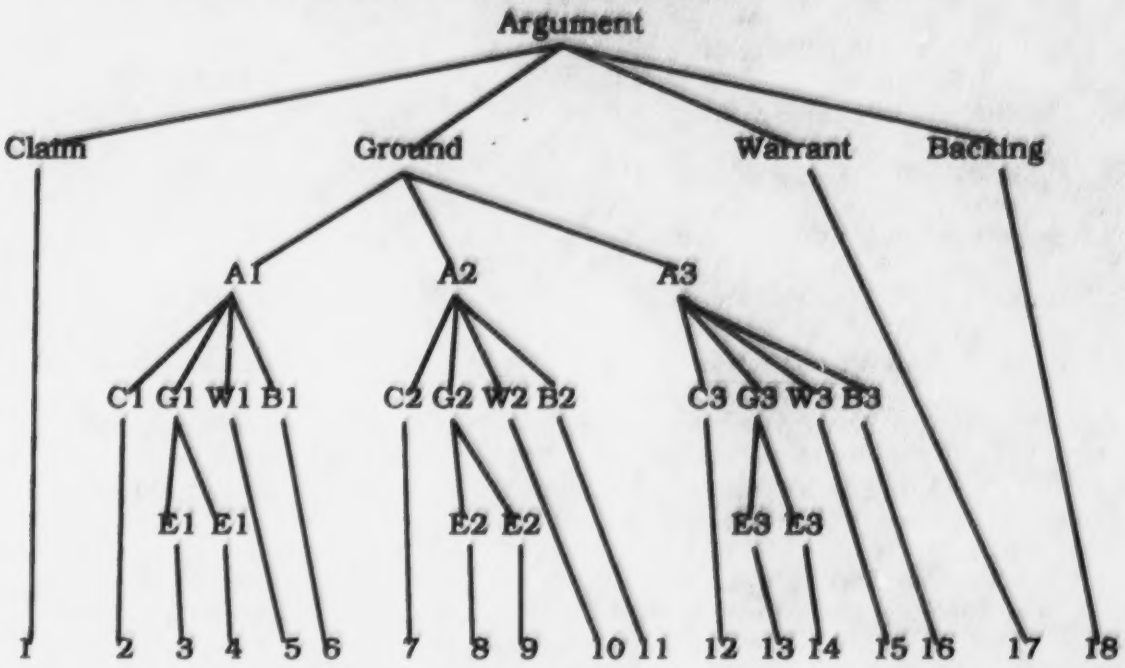
Toulmin's critical thinking theory, despite its potential usefulness, has left several issues undetermined. First, his model explains the relationship between and among different components of an argument, but the absence of a hierarchical structure limits its explanatory power in that the process one uses to arrive at one's interpretation cannot be accommodated in a surface structure analysis. This problem becomes most apparent when we apply this model to text of moderate length, in which claims on one level serve as grounds for a larger claim on a higher level.

It may be instructive for us to analyze a segment of text of sufficient length to demonstrate how this concept of embedding works. Let us examine the following passage:

> -- It seems to me that people are going too far when they claim that it is not safe to eat apples and pears because pesticide sprays have been used.
>
> What they do not seem to know is that sprays against fruit pests, the codling moth and pear psylla, for instance, have been used in the Okanagan for 50 years at least. If sprays are dangerous, this surely would have shown up by now in Okanagan medical records. I was born in the Okanagan and lived there for 30 years, but I, my daughter and granddaughter seem quite healthy, and I see no evidence of genetic damage.
>
> If sprays had not been used during all those years the insects would have taken over and there would now be no apples and pears, or else wormy ones. The entomologists are trying to find alternate ways of controlling insect pests but entomologists are hard to come by.

I should like to suggest that an orchardist using spray is no more dangerous to the human race than the automobile which is not only air-polluting but uses a vital resource which is fast disappearing. (Johnson & Blair, 1983, p. 229.)

The hierarchical structure may work this way:




1: People are going too far when they claim that it is not safe to eat apples and pears because pesticide sprays have been used.

2: Use of pesticides does not seem to bring about any health hazard.

3: There has been no medical record to support any health hazard claims in 50 years.

4: Writer's family history of three generations showed no signs of genetic damage.

5: To be supplied by the reader.

6: To be supplied by the reader.

7: Use of pesticides is necessary to save fruits.

8: No alternative method is available.

9: Fruits which are not sprayed are usually damaged.

10: To be supplied by the reader.

11: To be supplied by the reader.

12: Spraying is no more dangerous to the human race than the automobile.

13: The automobile pollutes the air.

14: The automobile uses vital resources.

15: To be supplied by the reader.

16: To be supplied by the reader.

17: To be supplied by the reader.

18: To be supplied by the reader.

The textual analysis above demonstrates quite adequately the need for a hierarchical structure which allows for the transformation of the functional roles of emergent concepts at different levels of analysis. This provision for embedding greatly enhances the explanatory power of the model, making it a useful tool in the analysis of text typical of natural discourse. The quality of one's reading comprehension depends, to a large extent, on the degree to which the reader can readily supply the warrants and backings called for, to make sense of the text as well as to evaluate the reasonableness of the argument. Viewing reading comprehension from this perspective, one can argue that teaching reading comprehension involves getting novice readers to recognize that what is left unsaid is just as important, if not more important, than what is said in a text. The teaching of reading comprehension skills such as finding the main idea, identifying supporting details, drawing conclusions, and making inferences, can only be meaningful if experiences with warrants and backings become an integral part of learning. As already pointed out in this paper, the literature in cognitive science has eloquently argued for the centrality of background knowledge in comprehension. What this critical thinking approach has offered us is the articulation of relationships between and among different components of an argument in ways which render the abstract process of meaning construction more concrete and more teachable.

How does a reader generate meaning from text? The critical thinking approach under discussion provides a componential analysis but it does not readily address the processes involved in meaning construction. As one reads, how does one abstract meaning from text and assign to each "idea unit" a functional role in the context of the overall argument? Van Dijk (1980) offers a set of macrorules which readers apply to a text to move

micro-information to macro level. These macrorules are: deletion, selection, generalization, and construction.

Deletion is the simplest and at the same time most general macrorule. This rule describes the process through which the reader deletes information irrelevant to his/her interpretation of other propositions of the discourse. Consider the following example:

> Today's Army consists of a cross-section of black Americans, plus the least-educated and least wealthy whites. As the sociologist Charles Moskos has pointed out, the enlisted ranks of the Army are the only place in major American institutions in which the average black is better educated then the average white. Meanwhile, a smaller and smaller portion of educated America has any first-hand exposure to the military and any direct stakes in its performance and the uses to which it is put. (James Fallows, New York Times, 6/14/81.)

The reader may automatically delete the statement from Charles Moskos, recognizing that such a deletion does not have much of an effect on his/her interpretation that the army is not a well-educated establishment.

The second macrorule, selection, is the flip-side of the same process in that the focus is on what has been selected to guide one's interpretation rather than what has been deleted. Deletion/selection is an operative process to determine what micro-information is to be excluded or included at the macrostructure level.

The third macrorule, generalization, describes the process through which the reader abstracts from the semantic detail in the text a macroproposition which is conceptually more general. For example:

> John was playing with his top. Mary was building a sand castle, and Sue was blowing soap bubbles. (Van Dijk, 1980, p. 46)

When reading these sentences, the reader may intuitively construct a proposition at a higher level of abstraction under which all three events may be subsumed. Such a generalization may read: The children were playing.

The fourth macrorule, construction, describes the process through which the reader arrives at a macroproposition based on a joint sequence of propositions on the micro-level. One distinctive characteristic of construction is that a new proposition must be created. For example, a person can construct a macroproposition which states "He took a plane to New York," after having read the following paragraph:

> I went through the doubled-glass doors and headed towards the counter. The attendant checked my passport, my ticket, and

gave me a stub for my luggage. He then directed my to wait at gate 21 for my flight to New York. Before I knew it, the plane was soaring into the sky.

Van Dijk sees these four rules, or the combination or permutation thereof, as operatives to denote processes through which readers transform micropropositions from text to macropropositions, which eventually emerge in a schematic form, with ideas organized into a coherent whole. Van Dijk refers to this schematic organization as superstructure. Toulmin's argument structure can be viewed as a superstructure in argumentation which can be readily applied to expository text. As one reads, one abstracts from the text macropropositions which fall into functional slots according to a superstructure which one has internalized. The four macrorules offered by Van Dijk provide a plausible explanation as to how these processes occur. Of the four rules, generalization and construction are most relevant to Toulmin's model since these processes point directly to the role of warrants and backings in the formulation and the evaluation of argumentation.

In this paper, I have presented a psychological perspective on reading comprehension based on schema theory and a philosophical perspective on reading comprehension based on Toulmin's argument structure analysis. The work of Van Dijk provides a meaningful way of connecting these two perspectives. What remains to be done is the development of a method through which texts of moderate length can be systematically analyzed. Hopefully we can glean from these analyses a better understanding of the teaching for and the teaching of reading comprehension.

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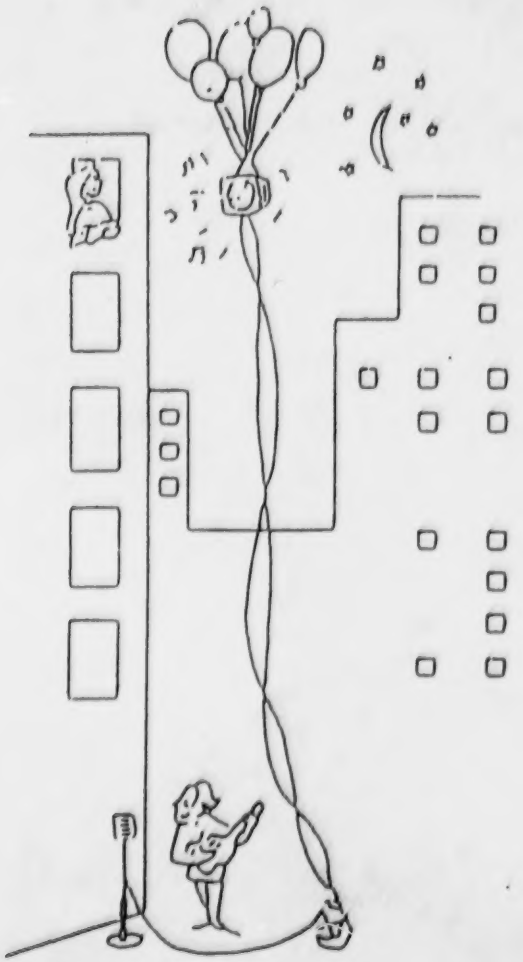
a.



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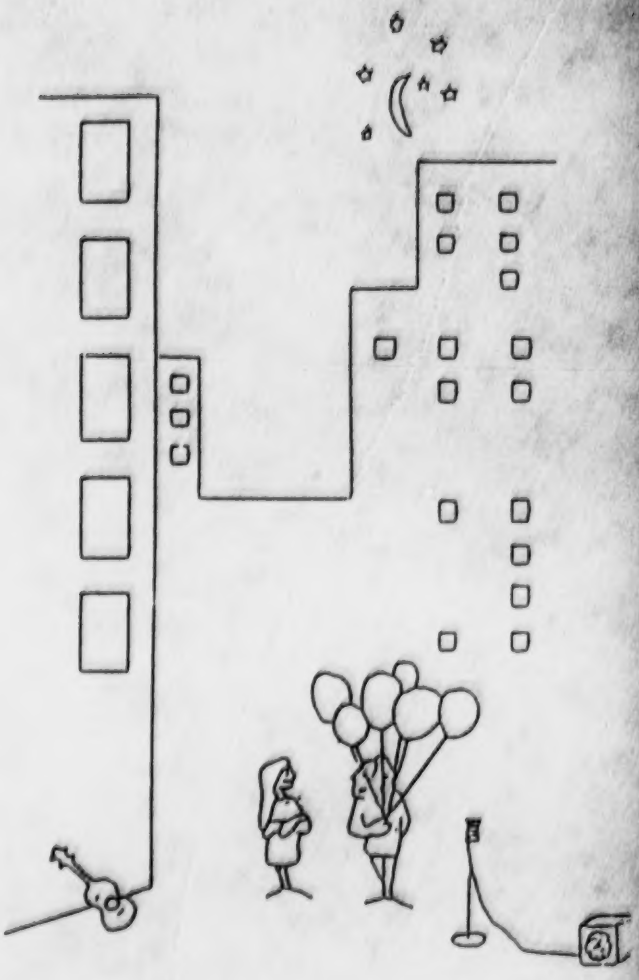

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**Montclair State College**
**Institute for Critical Thinking**

**Resource Publication Series**
**1989**

The Institute for Critical Thinking at Montclair State College is designed to support and enrich faculty development efforts toward critical thinking as an educational goal. Guided by a National Advisory Board and a College Advisory Council, its primary purpose is to serve as a catalyst in the development of educational excellence across the curriculum at the College. A collaborative, multi-disciplinary approach is in process, with attention to the study of both the theoretical aspects of critical thinking across the disciplines and their implications for teaching and learning at the college level. Leadership roles have also been assumed in helping other colleges and schools to incorporate critical thinking into their curricula.

As part of this effort, the Institute for Critical Thinking publishes a newsletter, *Critical Thinking: Inquiry Across the Disciplines*, on a monthly basis during the academic year. The newsletter publishes information about the activities of the Institute, as well as brief analyses of various critical thinking issues. In addition, the publication of several series of resource documents are in process. These publications will make available, to interested faculty and others at Montclair and elsewhere, working papers related to critical thinking as an educational goal. These publications will enable those persons interested in critical thinking to have access to more extensive discussions of the kinds of issues that can only be presented in summary form in the newsletter. These discussions will typically be regarded as works-in-progress: articles written as tentative arguments inviting response from others, articles awaiting the long publication delay in journals, etc. The proceedings of our conferences will also be presented in the form of resource publications, as will articles based on our series of lectures, inquiry panels, and faculty seminars and forums.

In this third series of resource publications, we have again included working papers by members and guests of our Institute Fellows "Round Table." Many of these working papers have been presented for discussion at one or more of the Fellows' seminar meetings, and have influenced our thinking about the nature of critical thinking as an educational goal. We have also included papers dealing with practical applications of the Institute's work and of related projects in other settings.

The Institute welcomes suggestions for our resource publication series, as well as for our other activities. Correspondence may be addressed to us at

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